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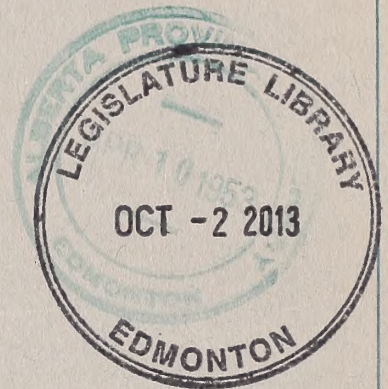
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GOVERNMENT OF THE PROVINCE OF ALBERTA

OFFICE OF  
ALBERTA POWER COMMISSION



ALBERTA POWER COMMISSION  
Annual Report  
For the Year Ended  
DECEMBER 31, 1952.

J.G. MacGREGOR  
CHAIRMAN





January 31st, 1953.

The Honorable Dr. J. L. Robinson,  
Minister of Industries and Labour,  
Administration Building No. 2,  
Edmonton, Alberta.

Sir:

I have the honor to submit herewith the  
Annual Report of the Alberta Power Commission for the  
calendar year ended December 31st, 1952.

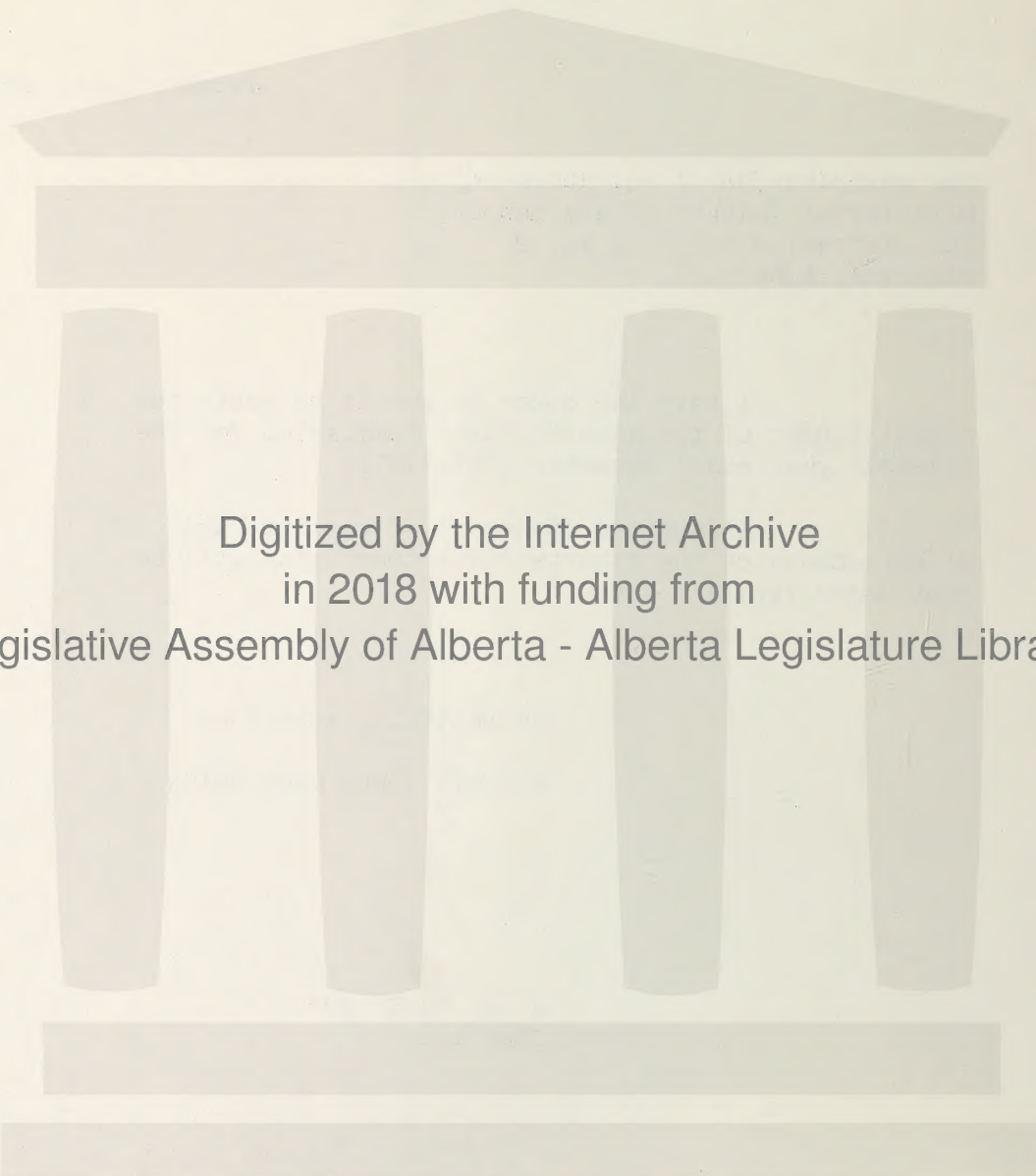
An audited statement of receipts and  
disbursements of the Alberta Power Commission will be  
sent under separate cover.

Respectfully submitted,

ALBERTA POWER COMMISSION

J. G. MacGregor,  
Chairman





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# ALBERTA POWER COMMISSION

## ANNUAL REPORT

For Year Ending December 31st, 1952.

The Alberta Power Commission is not an operating Commission; that is it does not own or operate any power plants, transmission lines or distribution systems. In this respect it is different from the Power Commissions in all the other Provinces, except Prince Edward Island and Newfoundland. Keeping this in mind, it might be well to consider the duties and the responsibilities of the Power Commission. Its duties at present, under the Power Commission Act, are only those of a regulatory or supervisory nature. These duties are largely covered by Section 6 of the Power Commission Act, which is as follows:

Whenever required so to do by the Lieutenant Governor in Council the Commission shall inquire into, examine and investigate, -

- (a) water powers and water privileges in Alberta, their value and capacity;
- (b) the existing facilities for the manufacture and distribution of power in Alberta;
- (c) such other matters relating to power and its distribution in Alberta as the Lieutenant Governor in Council from time to time may require;

and shall report thereon to the Lieutenant Governor in Council.

The Commission feels that its principal duties at the present time are three fold.

1. Collection of statistics in connection with the Central Station Industry in the Province, and the study of these statistics. Along these lines the Commission was instructed to carry out a power survey of the Central Station Industry in the Province. This survey was completed this fall, and has been printed under separate cover.





2. The study of hydro-electric power sites and other power possibilities in the Province. During the past year this study has taken the form of a continuation of studies which were under way in previous years in connection with hydro-electric possibilities on the Athabasca River. This will be covered in greater detail later. It is hoped in the near future that we may be able to embark upon the study of fuels and fuel burning plants in the Province.
3. Farm Electrification. The Commission has devoted most of its time to the various problems of farm electrification. As the number of electrified farms increases these problems become more complex, but we propose to deal with this later in the report.

During the year the Commission has held six formal meetings, at which the problems outlined above were discussed. In addition to this, the Commission has paid two formal visits as a body. One of these was to the Peace River country which included a visit to the proposed hydro-electric plant site on the Heart River near McLennan, as well as visits to all the power plants in the larger towns in the Peace River area. The other visit was to the plants of the Calgary Power Ltd. on the Bow River, and to the proposed site of the Bearspaw dam a few miles west of Calgary.

We cannot let this opportunity pass without expressing the appreciation of the Commission to Mr. Ben Russell and Mr. P. M. Sauder, former members of the Commission upon whose broad experience and skill we still rely for advice. We are particularly grateful to Mr. Russell, Director of Water Resources, who, since he is located in Edmonton, has been able to attend our meetings, and has contributed much to them. Nor can we forget Mr. Vernon Pearson who for many years was Technical Advisor to the Commission, but who is retired from the Government's service. On the first of November, Mr. William Dick was added to the Commission as a member. We feel that his great experience in the engineering field and particularly his intimate knowledge of coal mining and of the fuel situation in the Province, makes him admirably suited to assist in this work.







## POWER SURVEY

The results of the power survey undertaken by the Commission have been printed separately. The statistics in that report will, we feel, form a basis for thinking about the Central Station Industry in the Province. Taken in conjunction with the Commission's annual report for the year 1951, this provides a background of statistics for future use. It is proposed that future Power Commission reports will bring this up to date from year to year by including the figures for the current year.

The figures for the year 1952 follow. Some of the minor figures are estimates only, due to the fact that the report has to be prepared before the various utilities have completed their statistics for the past year. It is not likely, however, that these estimates will be in error by more than 1% or 2%, and the error in the whole will be negligible. Wherever a figure has been estimated it is marked "Est." In any event, it is proposed to supply the revised figures in the next year's report.

Tables No. 1 to 4, deal with plant capacity, peak load, and K.W.H. generated. They break up the figures to show what was generated by hydro, steam, and internal combustion engines, and also to show the proportions generated by the publicly owned and the privately owned plants. Table No. 4 gives further details of the generating plants and their output. It will be noted that it is divided into five groups, - A, B, C, D, and E.

The largest, Group A, contains those power plants which are connected together by transmission lines, so that we speak of them as being in the interconnected system. Medicine Hat was connected to this system in the fall of 1952.

Group A covers most of the Province, as well as including the towns served by the Calgary Power Ltd., and Canadian Utilities Limited. It includes the Cities of Calgary, Red Deer and Medicine Hat, and the towns of Ponoka, MacLeod and Cardston. In most cases these places do not generate their own





power, but purchase it from the Calgary Power Ltd., and retail it to their inhabitants.

Group B takes in the Peace River country and includes the territory served by Canadian Utilities Limited and the Northland Utilities Limited.

Group C includes those towns from Sangudo to Greencourt. The Northland Utilities Limited have a diesel plant at Mayerthorpe, and run lines east and west to serve these other towns.

Under Group D are listed the miscellaneous towns served by Northland Utilities in the area north and west of Edmonton. These towns are all isolated towns with the exception of Athabasca, where, as at the end of 1952, there was a line running from Athabasca to Meanook.

Under Group E we have included the other isolated towns in the Province, such as the Town of Edson, which is served by a municipal plant, and various small towns more or less on the fringes of the Province, such as Entwistle, Empress, Ft. McMurray, Caroline, Hines Creek, Kinuso, etc.

The interconnected system shown as Group A had, in 1952, a combined capacity of 294,775 K.W., and generated 1,191,219,841 K.W.H. It served 184,281 customers. This system accounts for 97% of the generating capacity of the Province, 98.5% of the K.W.H. generated, and 94% of the number of customers.





TABLE NO. 1.

The following Companies or Municipalities provide Central Station Electrical Service in the Province. This table gives preliminary data as to the size of their operations, their loads, and the K.W.H. they generated in 1952.

Privately Owned.

<u>Name of Company</u>	<u>Plant Capacity Dec. 31/52 K.W.</u>	<u>Peak Load on Plants Dec. 31/52 K.W.</u>	<u>K.W.H. Generated Net - 1952</u>
A. Calgary Power Ltd.	163,000	162,700	757,864,100
Canadian Utilities Ltd.	29,220	23,340	76,152,573
Northland Utilities Ltd.	5,029	3,737	11,430,707
* East Kootenay Power Co. Ltd.	12,500	12,100	52,647,400
Misc. Plants	2,279	1,900	2,160,331 (Est.)
A. Total	<u>212,028</u>	<u>          </u>	<u>900,255,111</u>

Publicly Owned

<u>Name of Municipality</u>	<u>Plant Capacity Dec. 31/52 K.W.</u>	<u>Peak Load on Plants Dec. 31/52 K.W.</u>	<u>K.W.H. Generated Net - 1951</u>
B. City of Edmonton	60,000	60,000	240,328,600
** City of Calgary (Victoria Station)	10,000	8,200	680,900
City of Lethbridge	8,875	7,200	31,295,400
City of Medicine Hat	13,400	8,900	38,602,475
Town of Edson	514	360	1,397,230
Town of Spirit River			150,000
B. Total	<u>92,789</u>	<u>          </u>	<u>312,454,605</u>
Plus A. Total	212,028		900,255,111
GRAND TOTAL	<u>304,817</u>		<u>1,212,709,716</u>

\* The East Kootenay Power's plant is located at Sentinel some two or three miles inside the Alberta Border. While this energy is generated in Alberta, most of it is exported to British Columbia. The amount generated by the East Kootenay plant accounts in a large measure for the discrepancy between the figures of the Dominion Bureau of Statistics and the Alberta Power Commission.

\*\* Operated by Calgary Power Limited.





TABLE NO. 2.

It is interesting to rearrange the figures of Table No. 1 so as to list them according to whether the power was generated by hydro, steam, or internal combustion plants.

HYDRO

<u>Name of Company</u>	<u>Plant Capacity Dec. 31/52 K.W.</u>	<u>Peak Load on Plants Dec. 31/52 K.W.</u>	<u>K.W.H.Generated Net - 1952</u>
Calgary Power Ltd.	163,000	154,500	757,864,100
Northland Utilities Ltd.	666	450	2,961,191
	<hr/>	<hr/>	<hr/>
Total Hydro	163,666		760,825,291

STEAM

Canadian Utilities Ltd.	27,000	21,250	69,800,966
* East Kootenay Power Co. Ltd.	12,500	12,100	52,647,400
City of Edmonton	60,000	60,000	240,328,600
** City of Calgary	10,000	8,200	680,900
City of Lethbridge	8,875	7,200	31,295,400
City of Medicine Hat	13,400	8,900	38,602,475
	<hr/>	<hr/>	<hr/>
Total Steam	131,775		433,355,741

INTERNAL CUMBUSTION

Canadian Utilities Ltd.	2,220	2,090	6,351,607
Northland Utilities Ltd.	4,363	3,287	8,469,516
Town of Edson	514	360	1,397,230
Town of Spirit River			150,000
Misc. Plants	2,279	1,900	2,160,331 (Est.)
	<hr/>	<hr/>	<hr/>
Total Internal Combusion	9,376		18,528,684
	<hr/>		<hr/>
GRAND TOTAL	304,817		1,212,709,716

\* See footnote Table No. 1.

\*\* See footnote Table No. 1.





TABLE NO. 3

The following table may be of interest as showing the relative position of steam, hydro and internal combustion in the Province, and of publicly owned and privately owned plants as at December 31, 1952.

<u>Method of Generation</u>	<u>% Power Generated</u>	<u>% of Capacity</u>
Hydro	62.7	53.6
Steam	35.7	43.1
Internal Combustion	1.6	3.3
	<hr/>	<hr/>
	100	100
Publicly Owned	25.8	30.5
Privately Owned	74.2	69.5
	<hr/>	<hr/>
	100	100





TABLE NO. 4

SUMMARY OF GENERATING PLANTS IN ALBERTA

as at December 31, 1952

Owner	Hydro		Steam		Internal Combustion	
	K.W. Rating	K.W.H. Generated Net - 1952	K.W. Rating	K.W.H. Generated Net - 1952	K.W. Rating	K.W.H. Generated Net - 1952
<u>A. Within the inter-connected system</u>						
Calgary Power Ltd. (only)	163,000	757,864,100				
Canadian Utilities Ltd.			27,000	69,800,966		
East Kootenay Power Co. Ltd.			12,500	52,647,400		
City of Edmonton			60,000	240,328,600		
City of Calgary			10,000	680,900		
City of Lethbridge			8,875	31,295,400		
City of Medicine Hat			13,400	38,602,475		
Total of Group A.	163,000	757,864,100	131,775	433,355,741		
<u>B. Systems within the Peace River country not inter-connected with each other</u>						
Canadian Utilities Ltd.					2,220	6,351,607
Northland Utilities Ltd. (including High Prairie, McLennan and Manning)					2,881	6,106,161
Spirit River						150,000
Total of Group B.					5,101	12,607,768
<u>C. Sangudo - Greencourt System</u>						
Northland Utilities Ltd.					300	581,021
Total Group C.					300	581,021





TABLE NO. 4 - Continued

Owner	Hydro		Steam		Internal Combustion	
	K.W. Rating	K.W.H. Generated Net - 1952	K.W. Rating	K.W.H. Generated Net - 1952	K.W. Rating	K.W.H. Generated Net - 1952
<u>D. Isolated Towns served by Northland Utilities Ltd.</u>						
Athabasca System					372	736,780
Jasper	666	2,961,191			550	520,626
Wildwood					130	116,167
Lac La Biche					130	408,761
Total Group D.	666	2,961,191			1,182	1,782,334
<u>E. Other Isolated Towns</u>						
Town of Edson					514	1,397,230
Misc. plants including Consort, Entwistle, Empress, Ft. McMurray, Forest Lawn, Alberta Beach, Caroline, Cowley, Hines Creek, Kinuso, Lomond, and Seba Beach, etc.					2,279	2,160,331 (Est.)
Total Group E.					2,793	3,557,561
Total all Groups	163,666	760,825,291	131,775	443,355,741	9,376	18,528,684
Total Hydro	163,666	760,825,291				
Total Steam	131,775	433,355,741				
Total Int. Comb.	9,376	18,528,684				
Grand Total	304,817	1,212,709,716				





The following comments deal with the Province as a whole.

K.W.H. Generated. The increase over the previous year for the Province as a whole was 13.1%. Generation by hydro plants increased 34.1%, while that of the steam plants decreased 24.3%. The reason for this is that the Spray Plants were in operation the full year of 1952, but only a small part of 1951, so less had to be generated by the steam plants to make up the necessary total.

There was a large increase in the K.W.H. generated by the internal combustion engines. This, of course, is largely that generated by the Northland Utilities Limited, and the Canadian Utilities Limited in the Peace River country.

Peak Load. This increased only 9.2%. In ordinary years this would seem to be a very large increase. Under present conditions it is much smaller than anticipated. Peak load usually occurs in December, and then only during the last few days before Christmas. It is greatly affected by weather. Extreme cold and blizzard conditions cause a very large increase in peak load. The weather in December was unusually mild. It has been estimated that, had the weather been cold, a peak load of 10,000 K.W. more might have been expected. The figures given below show our estimate of the actual coincident peak for the Province.

TABLE NO. 5

<u>System</u>	<u>Estimated Peak Load K.W., 1952.</u>
Interconnected system, less East Kootenay Power Co. Ltd.	251,800
East Kootenay Power Co. Ltd.	12,100
Canadian Utilities Limited (Grande Prairie)	2,100
Northland Utilities Limited	3,740
Edson	360
Miscellaneous plants	1,900
	<hr/>
	272,000





The figures for generation in Tables No. 1 to 4 are those for the Central Station Industry only. These are the figures usually quoted in the Canada Year Book, and by other organizations gathering statistics.

In addition to these, of course, much electricity is generated by various industries for their own use. It is hard to know where to draw the line as to how small an industry should be included when gathering statistics of this energy generated. In Table No. 6, we have collected this information under the headings of mines, Provincial Government plants, and other industries.

TABLE NO. 6

Industries Generating all or part of  
their own power.

	Plant Capacity K.W.	K.W.H. Generated.
Mines	4,385	12,805,958
Other Industries	4,970	10,310,550
Provincial Government Plants	2,970	5,475,855
	<hr/> 12,325	<hr/> 28,592,363

These industries at present in the Province which generate their own electricity are small compared to the large new ones which are now under construction. Some data in connection with these new industries is given below.

The Sherritt-Gordon plant at Fort Saskatchewan will have 8,000 K.W. connected, and a maximum demand of 7,000 K.W. It proposes to install and operate one 2,500 K.V.A. generator, and will buy the rest of its requirements.

The Canadian Industries Limited plant at Clover Bar will require 3,000 K.W., but will buy all of its power.

The Celanese plant at Clover Bar will produce all its own power. This is going to be a large amount, as they propose to install three 6,000 K.V.A. generators operating at 6,900 volts.



Transmission lines in the Province increased by 452 miles to a total of 5,822. Distribution line mileage increased by 242 miles to 2,514. The mileage of farm lines increased by 4,108 miles, so that the total farm mileage at the end of 1952 was 13,721. The total mileage of all power lines in the Province at the end of December 1952, was 22,057.

The total investment in plants and lines increased approximately \$15,515,000. Of this increase, lines built for, and owned by Co-operative Rural Electrification Associations, amounted to \$4,064,000.

The total historic cost of the Central Station Industry of Alberta as at December 31st, 1951, was estimated at \$120,618,600. In the Commission's Power Survey it was thought that at present day prices, this would have a value of possibly 100% more. We would be safe in assuming present value as of December 31st, 1951 to be about \$200,000,000. To this, of course, should be added the \$15,515,000 of investment added during 1952. Of the total amount, about \$16,000,000 is represented by rural lines.





Total Circuit Miles of Transmission Lines in the Province by Regional Groups as at December 31, 1952.  
This includes Company Owned Lines, but does not include the Co-operative owned farm lines.

		<u>VOLTAGE</u>							<u>Total</u>	<u>Remark</u>
		<u>2,300 V.</u>	<u>6,900 to 12,00 V.</u>	<u>13,800 V.</u>	<u>22,00 V.</u>	<u>33,000 V.</u>	<u>50,000 V.</u>	<u>66,000 V.</u>	<u>132,000 V.</u>	
A.	<u>Within the Interconnected system.</u>									
	Calgary Power Ltd.			97	2,362	51	107	600	734	3,951
	Canadian Utilities Ltd.	55		18	828	329		228		1,458
	City of Medicine Hat			28						28
	East Kootenay Power Co.	6	26					48		80
		<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>
	Total Group A.	61	26	143	3,190	380	107	876	734	5,517
B.	<u>Systems within the Peace River country.</u>									
	Canadian Utilities Ltd.	6	21	62	65					154
	Northland Utilities Ltd.		27	36	53					116
		<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>					<u>        </u>
	Total Group B.	6	48	98	118					270
C.	<u>Sangudo-Greencourt System</u>									
	Northland Utilities Ltd.		20							20
			<u>        </u>							<u>        </u>
	Total Group C.		20							20
D.	<u>Isolated Towns of Northland Utilities Ltd.</u>									
	Athabasca - Colinton		15							15
			<u>        </u>							<u>        </u>
	Total Group D.		15							15
	TOTAL ALL GROUPS	<u>67</u>	<u>109</u>	<u>241</u>	<u>3,308</u>	<u>380</u>	<u>107</u>	<u>876</u>	<u>734</u>	<u>5,822</u>





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TABLE NO. 8

SUMMARY OF DISTRIBUTION SYSTEMS IN ALBERTA  
as at December 31st, 1952

	Total Number of Customers Served	K.W.H. Sold (Less Sales to other Co.s)	Circuit Miles of Line
<u>A. Within the Interconnected System</u>			
Calgary Power Ltd.	51,000 (Est.)	429,718,457	724
Canadian Utilities Limited	21,536	53,916,502	313
* East Kootenay Power Co. Ltd.	1,162	17,376,045	21
City of Edmonton	47,088	188,568,975	419
City of Calgary	45,500 (Est.)	210,000,000 (Est.)	530 (Est.)
City of Lethbridge	7,600 (Est.)	38,000,000 (Est.)	88 (Est.)
City of Medicine Hat	5,090	31,494,065	104
City of Red Deer	2,828	7,637,128	39
Town of Cardston	850 (Est.)	2,600,000 (Est.)	16 (Est.)
Town of MacLeod	625 (Est.)	1,580,000 (Est.)	12 (Est.)
Town of Ponoka	1,002	2,288,800	19
Total Group A.	184,281	983,179,972	2,285
<u>B. Systems within the Peace River country not connected with each other.</u>			
Canadian Utilities Ltd.	2,981	5,334,952	43
Northland Utilities Ltd., including High Prairie, McLennan and Manning Spirit River	3,269	5,227,344 150,000	90
Total Group B.	6,250	10,712,296	133
<u>C. Sangudo - Greencourt System</u>			
Northland Utilities Ltd.	502	489,771	10
Total Group C.	502	489,771	10



TABLE NO. 8 - Continued

	<u>Total Number of Customers Served</u>	<u>K.W.H. Sold (Less Sales to other Co.s)</u>	<u>Circuit Miles of Line</u>
D. <u>Isolated Towns served by Northland Utilities Ltd.</u>			
Athabasca System	431	670,803	10
Jasper	539	3,001,605	20
Wildwood	93	87,417	5
Lac La Biche	252	310,849	7
	<hr/>	<hr/>	<hr/>
Total Group D.	1,315	4,070,674	42
E. <u>Other Isolated Towns</u>			
Town of Edson	735	1,257,500	9
Miscellaneous	2,451	2,160,331	35
	<hr/>	<hr/>	<hr/>
Total Group E.	3,186	3,417,831	44
	<hr/>	<hr/>	<hr/>
GRAND TOTAL	195,534	1,001,870,554	2,514
	<hr/>	<hr/>	<hr/>

\* Includes Towns of Coleman, Frank, Cowley, etc.





TABLE NO. 9

SUMMARY OF RURAL ELECTRIFICATION SYSTEMS IN ALBERTA  
as at December 31st, 1952.

<u>Owner</u>	<u>Number Farmers Served</u>	<u>Number of Non-farmers Served</u>	<u>Total Number Customers</u>	<u>Circuit Miles of Line.</u>
A. <u>Calgary Power Ltd.</u>				
Experimental Areas and Individual Rurals	3,617	497	4,114	2,119
R.E.A.s	10,400	1,877	12,277	8,683
<u>Canadian Utilities Limited.</u>				
Experimental Areas and Individual Rurals	803	110	913	366
R.E.A.s	2,416	296	2,712	2,119
<u>East Kootenay Power Co.</u>				
R.E.A.s and Lundbreck Co-op.	11		11	21
City of Edmonton	98		98	50
City of Calgary	161		161	80
City of Red Deer	24		24	10
Town of Ponoka	<u>7</u>	<u>      </u>	<u>7</u>	<u>4</u>
Total Group A.	17,537	2,780	20,317	13,452
B. <u>Systems within the Peace River country not interconnected with each other.</u>				
<u>Canadian Utilities Limited.</u>				
Experimental Areas and Individual Rurals	75	88	163	32
R.E.A.s	104	2	106	74
<u>Northland Utilities Limited.</u>				
Experimental Areas and Individual Rurals	167		167	50 (Est.)
R.E.A.s	60		60	33 (Est.)
Total Group B.	<u>406</u>	<u>90</u>	<u>496</u>	<u>189</u>





TABLE NO. 9 - Continued

<u>Owner</u>	<u>Number of Farmers Served</u>	<u>Number of Non-farmers Served</u>	<u>Total Number Customers</u>	<u>Circuit Miles of Line</u>
C. <u>Sangudo-Greencourt System</u>				
Northland Utilities Ltd. Owned				
Rurals.	21	1	22	10 (Est.)
R.E.A.s	60		60	60
	—	—	—	—
Total Group C.	81	1	82	70
D. <u>Isolated Towns Served by Northland Utilities Ltd.</u>				
Company owned Rurals	31		31	10 (Est.)
	—		—	—
Total Group D.	31		31	10
	—	—	—	—
GRAND TOTAL	18,055	2,871	20,926	13,721
	=====	=====	=====	=====



TABLE NO. 10

DATA RE CENTRAL ELECTRIC STATIONS IN ALBERTA BY REGIONAL GROUPS  
as at December 31st, 1952.

Plants	Group A	Group B	Group C	Group D	Group E	Total
K.W. Rating	294,775	5,101	300	1,848	2,793	304,817
K.W.H. Generated	1,191,219,841	12,706,768	581,021	4,743,525	4,954,791	1,212,709,716
<u>Transmission Lines and Substations</u>						
Miles of Line	5,517	270	20	15		5,822
<u>Distribution Lines</u>						
Number of Customers Served	184,281	6,250	502	1,315	3,186	195,534
K.W.H. Sold	983,179,972	10,712,296	489,771	4,070,674	3,417,831	1,001,870,544
Miles of Line	2,285	133	10	42	44	2,514
<u>Rural Lines</u>						
* Number of farms served	17,537	406	81	31		18,055
* Number of Non-farmers served	2,780	90	1			2,871
* * Miles of Line	13,452	189	70	10		13,721

\* Included in Number of Customers shown under Distribution Lines.

\*\* Not included in Miles of Line shown under Distribution Lines.





The following is a more detailed summary of the increases in generating capacity, transmission lines, etc., during the year 1952.

Calgary Power Ltd.

(1) Changes in Plant Capacity

During the year, there were no major additions to the generating system. Equipment was purchased and received to modernize the existing Horseshoe generating station. Considerable work has already been done on the generators, but due to the heavy loads being carried on the system, further work has been deferred until next spring. When the work is complete the plant capacity will be increased by some 4,000 h.p.

Active construction has been started at the Bearspaw site. This project is expected to be completed early in 1955 - will cost about \$5,500,000 and represents an increase of 22,000 h.p. in the Company's generating capacity.

Equipment has been placed on order to extend the existing Ghost plant. The extension will provide an additional 30,000 h.p. - will cost about \$1,750,000 and is planned to go into operation in the early summer of 1954.

The Company has also entered into an arrangement with the City of Medicine Hat for the construction of an extension to the existing Medicine Hat gas-fired steam plant. When completed in October or November of 1953, this will make available a further 25,000 KW to the Company's generating facilities. As part of this program, the Company is constructing a 138,000 volt transmission line from Medicine Hat to Calgary.

(2) Major Changes in Interchange Agreements.

During 1952, no significant changes were introduced in the existing interchange agreements. Due to the relatively high water conditions which occurred during the past season only a relatively small amount of energy was purchased through the inter-connections.

On November 13th, Calgary Power connected the Medicine Hat steam plant to the system. Sufficient of the 132,000 volt Medicine Hat to Calgary line was



put into service to permit temporary operation at 66,000 volts to Brooks. Since the inter-connection was completed, the Medicine Hat plant has supplied continuously to the system.

- (3) Additional transmission lines completed by the end of the year or under construction.

Although the new 138 KV line from Ghost plant to Edmonton was placed in service in December of 1951, temporary construction was necessary through the cities of Red Deer and Wetaskiwin owing to late arrival of the steel for the transmission towers at these places. At the Edmonton end a temporary connection was made with the existing 138 KV transmission line and it was not until early this summer that the erection of steel towers at the Edmonton end were completed to interconnect the new transmission line with a new 138/66/22 KV substation at East Edmonton. Several other minor transmission changes were required in this area in order to take full advantage of the new substation. The steel towers through Red Deer and Wetaskiwin have not been erected yet, but the Company expects to be able to get the line out of service and complete these sections during February, 1953.

New 66 KV lines from Bardo to Camrose, and Bardo to Wainwright, were completed early in 1952, and placed in service to supply the increasing loads in these areas. As the year ends, construction is proceeding on a new 66 KV circuit between Wetaskiwin and Camrose which will provide alternative feed to Camrose and other points on the eastern part of their system, and complete a 66 KV loop to Edmonton.

New 22 KV lines undertaken in the northern part of the province early in the year, included one from Stony Plain to Onoway; Stony Plain to Wabamun and Kapasiwin Beach; a new 22 KV circuit from Devon to Ellerslie to supply large oil pumping loads; and another 22 KV line from Devon to the Golden Spike area. At the present time construction of a line is progressing between Bashaw and Ferintosh, and early in 1953 the conductor on the line between Camrose and Ferintosh will be changed so as to handle increased oil demand in this area.





During the year construction activity has decreased in the Redwater field, and only a few new extensions are now required. Activity has remained at a very high level in the Leduc field and particularly in the Armena-Camrose area, which is assuming proportions nearly equal to the Redwater field of two years ago.

In the south part of the province, the main transmission line work has been the construction of a 138 KV transmission line from Medicine Hat to Brooks which was energized temporarily at 66 KV early in November. Construction of this line west from Brooks has been completed across the Bow River for a distance of approximately 30 miles. The balance of this line to East Calgary substation will be completed in 1953. Surveys for this will be completed by the end of the year.

A 66 KV pin type line from the Lethbridge-Taber line to Stirling has been constructed and is now supplying the line to Milk River from a new substation erected at Stirling.

The main changes west of Calgary have been the construction of a new 34 KV line from Kananaskis Plant west to the Spray Plants. This line will supply the increased load at the Canada Cement Company, and allow removal of the 138 KV transformer now at Exshaw.

In summary, the following additions and deletions were made to the system in 1952:

- 138 KV - 95 miles built.
- 66 KV - 19 miles built.
- 33 KV - 20.7 miles built or re-insulated for this voltage.
- 22 KV - 93.8 miles built.
- 13 KV - 52.3 miles dismantled or converted to 33 KV.



- (4) Villages and Hamlets added to Calgary Power Ltd. system during 1952.

	<u>Customers</u>
Bloomsbury	7
Carbondale	8
Dog Pound	6
Dorenlee	4
Eagle Hill	9
Herronton	11
Hillcrest	251
Kapasiwin	34
Kootuk (South Eckville)	9
Morningside	6
Mossleigh	30
Neerlandia	29
N. Belvedere Sub. Div.	5
Onoway	116
Rolling Hills	60
Usona	6
Vega	6
Wabamun	25
Westward Ho	14
	<u>636</u>

(5) New Business

The following list indicates the oil well and battery pumping services supplied by Calgary Power Ltd.:

Oil Well Pumping Services

	<u>Dec. 1951</u>	<u>Dec. 1952</u>
Acheson - Stony Plain	4	14
Armena	0	100
Barons	4	3
Campbell	10	23
Camrose	0	99
Joseph Lake	72	85
Leduc	89	204
Redwater	895	925
Whitemud	1	2
Excelsior	0	1
Bon Accord	0	2
Ellerslie	1	8
Golden Spike	0	3
Turner Valley	0	9
	<u>1,076</u>	<u>1,478</u>

Battery Pumping Services

Joseph Lake	9	9
Leduc	20	20
Redwater	48	50
	<u>77</u>	<u>79</u>





The following are new industrial loads supplied or contracted for by

Calgary Power Ltd.:

Trans Mountain Pipe Line	Edmonton Terminal	400 H.P.
Canadian Celanese	"	500 "
* Ajax Pipe Line Co.	St. Albert	100 "
Building Products	Edmonton	150 "
* Borneo Brick Plant	"	400 "
Imperial Oil Refinery	Edmonton Addition	1000 "
Canadian Industries Ltd.	Calgary	1000 "
Imperial Pipe Line	Nisku	1850 "
	White Mud	450 "
	Golden Spike	100 "
* Interprovincial Pipe Line	Edmonton	475 "
	Hardisty	50 "
	Redwater	180 "
* Edmonton Pipe Line	Joseph Lake	100 "
Texaco Pipe Line	Calmar	300 "
* Imperial Oil	Golden Spike	150 "
Stramit Corp.	Strawboard Plant,	
	Innisfail	50 "
United Trailer Co.	High River	160 "
R.C.A.F.	Penhold, 750 ult.	250 "
	Claresholm	450 "
Dept. of National Defence	Wainwright	
	(3000 HP ult.)	1800 "
Canada Cement	Exshaw	5500 " (Increase in 1952)
* Contracted for but not yet supplied.		

In addition to the above, the Company is negotiating a contract for the supply of power to the Sherritt-Gordon Refinery at Fort Saskatchewan now in the course of construction and expected to go into operation about January of 1954. This will be a total connected load of some 9,000 H.P. with an estimated demand of 7,500 H.P. of which Calgary Power will supply the full requirements until such time as Sherritt-Gordon completes the installation of their own steam turbine, after which Calgary Power will be supplying approximately 4,500 H.P.

The Company is also negotiating for the supply of power to the Canadian Industries Limited Polythene Plant at Edmonton amounting to some 3,000 H.P.

Canada Cement, as shown in the tabulation above, completed their extension during this year increasing their load requirements to about 12,500 H.P. from a previous 7,000 H.P. or an increase of some 5,500 H.P.



Canadian Utilities Limited.

(1) Changes in Plant Capacity

In December, 1952, the Canadian Utilities Limited installed and put on the line in their Drumheller plant at 7,500 K.W. Parsons turbine.

Their Youngstown plant was closed down and three units totalling 170 K.W. were moved from there and installed in their Grande Prairie plant.

The plants at Cold Lake and Spirit River were closed down as transmission lines from central stations were extended to these places.

(2) Transmission Lines.

Spirit River was tied in to the Grande Prairie system by the completion of six miles of 24,000 volt line from Rycroft.

A 69 K.V. line is now in operation from the Vermilion plant to the Cold Lake airport. This involved converting about 30 miles of 34.5 K.V. transmission line to 69 K.V. and the construction of about 70 miles of new 69 K.V. line. An additional circuit was carried to the airport from Bonnyville. This is a 24 K.V. and is partly new line and partly a double circuit on the 69 K.V. line.

The 34.5 K.V. line, Derwent - Marwayne - Lloydminster, has been changed from 24 K.V. to 34.5 K.V., with provision to Star to 60 K.V. in the future.

In the Drumheller district, a 24 K.V. line was built from Hanna to Youngstown. This enabled Canadian Utilities Limited to shut down the Youngstown plant. From this line, a 12 mile tap was built to serve a strip mine at Sheerness.

(3) The following is a list of the villages and hamlets added to the system this year:

Ardmore	Richdale
Ashmont	Scotfield
Byemoor	Sheerness
Endiang	Spedden
Heinsburg	Spirit River
Lanfine	Stanmore
Lindberg	





There has been rapid expansion in the Lloydminster - Blackfoot oil fields, necessitating the building of additional circuits and increasing transformer capacity to handle this growing load. The Big Valley - Stettler oil field, while expanding rapidly, is not, as yet, using much power for pumping as nearly all these wells as flowing, particularly if they are in the D-3. There are some D-2 and cretaceous wells, however, that are pumpers from the start. Canadian Utilities Limited have a contract with Canadian Gulf Pipe Line to supply service for their new oil pipe line to Edmonton. Operations have not begun, although these lines are built.

Northland Utilities Limited.

(1) Changes in Plant Capacity.

The only major additions to the generating capacity in the plants of this Company has been the addition of two 500 K.W. Cooper-Bessemer engines in their Fairview plant. The fuel supply for these engines is to be natural gas.

(2) Additional Transmission Lines completed during the year.

A 13,200 volt line was constructed from the vicinity of Donnelly, west of McLennan, to Peace River town. This line ties together the two largest systems of the Northland Utilities Limited in the Peace River country, so that now, all the towns from Fairview on the west to Peace River town, and south to McLennan, are tied into one interconnected system. This should tend to increase the efficiency of operation of this Company, and to make possible the transfer of power from its gas-fueled plant at Fairview to the rest of its system. This transmission line will also serve some farmers en route, as well as the Hamlet of Nampa. The building of these interconnected lines is an indication of the growth and development of the country. It appears that the next and logical development along the lines of interconnection in the Peace River country will be the building of a tie line between Rycroft, on the Canadian Utilities' system, and Fairview on the Northland Utilities system, and the building of a tie line to connect Wanham on the Canadian Utilities system, with Girouxville on that of the



Northland Utilities. These two lines, when they come to be built, will tie the Peace River country into one interconnected system operated by the two companies.

Northland Utilities Limited have also constructed a line from High Prairie to Enilda, as well as a line from Manning to Notikewin. They have also extended their transmission line from Colinton to Meanook, and to the Government Observatory, a few miles west of Meanook.

#### City of Lethbridge

##### (1) Changes in Plant Capacity.

During the year work has been progressing on the installation of a new 5,000 Turbo generator. This will be completed early in 1953. When it is completed, however, it will not increase the plant's capacity by very much until such time as a new boiler is installed to supply it with steam.

##### (2) Additional Transmission Lines completed during the year.

No transmission lines have been built, but the distribution lines within the city have been extended 5.2 miles.

#### City of Medicine Hat.

##### (1) Changes in Plant Capacity.

Construction has been under way during the year of an extension to the city's plant. This extension will contain a 30,000 K.W. Turbo generator with the necessary boilers, etc. It is expected that this new unit will be on the line in October or November of 1953.

##### (2) Additional Transmission Lines completed during the year.

Medicine Hat was connected to the large interconnected system of the Province, and early in November had started to supply power to the system over the transmission lines of the Calgary Power Ltd.





City of Edmonton.

(1) Changes in Plant Capacity

Construction has also been in progress in the Edmonton plant where the extension has been made to accommodate a new 30,000 K.W. turbine. It is expected that this turbine will come on the line some time during the summer of 1953.

East Kootenay Power Company, Limited.

The East Kootenay Company, Limited has not made any major extensions either to its generating plant or to its transmission and distribution systems in Alberta during the year.

STUDIES OF WATER POWER SITES

An aerial survey of the Athabasca River was started in 1951, and is being carried through as a combined effort between the Alberta Power Commission, The Department of Water Resources and the Calgary Power Ltd. Generally speaking, the Power Commission's share of this undertaking is confined to paying for the aerial photography. The Calgary Power Ltd. send in their own parties to establish the ground control. It seems probable that when power plants are built on the river, the Calgary Power will build them, but by combining our efforts in the manner in which we have done, this information gained by both the Power Commission, the Department of Water Resources and the Calgary Power Ltd. will be available to all three. In the event that some other company became interested in developing the Athabasca River, the information on file with the Department of Water Resources and the Alberta Power Commission, would be available to that company.

Two photographic flights were made from Smith to Ft. McMurray in October, 1951, but neither of these were satisfactory. This stretch of river was flown again in October, 1952, and satisfactory photographs were obtained.

Aerial photographs themselves are very little help without being tied in to a number of control points on the ground. Having these, it is possible



to interpret the photographs and to obtain from them all the information that is necessary to plot contour maps.

Over forty years ago, 1912, a surveyor by the name of Dozois, ran levels along the ice of the Athabasca River, and established a number of bench marks. During the intervening forty years, these have been hidden by the growth of the forest, and one of the first jobs necessary was to send parties in to find these again. In the summer of 1951, the Calgary Power sent in ground control parties who located these old bench marks, so that now ground control has been established from Athabasca Landing to the 21st base line; that is, just below Pelican Rapids. In February of 1952, the Calgary Power Ltd. ground control started from McMurray and re-established the bench marks and ran levels from Ft. McMurray to a point approximately forty miles above Ft. McMurray. In June, 1952, the Calgary Power party re-established the bench marks from a point forty miles upstream from Ft. McMurray to Grand Rapids. The work that still remains to be done to complete the system of ground control, is to carry the levels from this point forty miles above Ft. McMurray to Grand Rapids. It is expected that this will be accomplished early in 1953.

When this is done it will be possible to make full use of the aerial photography to make contour maps of the Athabasca River from Smith to Ft. McMurray. It is expected that these will be completed in 1953, and that then we will have a map giving us 20 foot contours for the whole of this distance.

In the summer of 1951 aerial photographs on the scale of 900 feet to one inch were obtained along the Lesser Slave River, from Lesser Slave Lake to the Athabasca River. At the same time, ground control was established along this length of river and we now have maps giving us 5 foot contours. These contours indicate that it would be difficult to draw the 1,000,000 acre feet of storage from Lesser Slave Lake during the season that it is required for power purposes. Since the use of the Lesser Slave Lake as a reservoir is essential in any scheme of development of the Athabasca River below Smith, it will be necessary to study





this problem more fully, and it is possible that hydraulic consulting engineers may be called in to give us a report on this problem.

Studies made this summer by the Calgary Power Ltd. on the proposed Wild Hay site near Jasper have been discouraging. It appears that the geology of the region may make it impossible to create a large reservoir or to run the necessary canals. This is a problem that will undoubtedly come in for more study in the future, but at the moment it appears that it would be preferable to develop other sites on the river ahead of the Wild Hay project.

#### Heart River

An aerial survey was made of the Heart River project north of High Prairie. The Power Commission arranged for the flying and mapping and the Department of Water Resources provided the ground control. This site was investigated because it appeared that a small hydro plant might be constructed there which would supply power to some of the areas served by Northland Utilities Limited. The Northland Utilities Limited have asked the Montreal Engineering Company to examine the plans obtained and to submit a report. Their preliminary report indicates that the cost of this is likely to be high compared to the amount of power that can be generated there. It is hoped that further study may yield a more encouraging report.

#### Cold Lake

The Alberta Power Commission in co-operation with Canadian Utilities Limited have started an aerial survey of the areas between Primrose Lake, Cold Lake and the Beaver River. Aerial photographs on the scale of 900 feet to the inch have already been obtained over these areas, and parties are presently in the field setting up ground control. A gauging station was established at the outlet of Cold Lake. If this site proves feasible it will go far to augment the power supplies in the extreme northeast corner of the settled portion of the Province.



## FARM ELECTRIFICATION

Farm Electrification made great strides in Alberta during 1952. 4,576 farmers were supplied with Central Station power during the year, so that there are now 18,055 getting Central Station service. At the end of the year approximately 10,000 more farmers were reported to be organized into R.E.A.s anxious and ready to take service. Most of these, however, are waiting to see what the new revolving fund legislation is going to do for them. It appears that, at the moment, there are only about a thousand of these who are fully prepared to go ahead regardless of that legislation.

We can obtain an idea of the magnitude of the task of farm electrification if we consider the number of poles set by the companies during the past year. They set approximately 55,000 poles during the year. In doing this they followed their usual practice of setting as many poles as they could during the good weather, with the idea that they could string the circuits on these later in the winter. If these 55,000 poles had all been set in one straight line, they would extend from Halifax to Vancouver with something over 100 miles extending into the ocean at each end.

From the standpoint of weather, 1952, with its early spring and exceptionally late fall, has been the best year for construction of pole lines that we are likely to see in a long time. This has helped the Companies to get their construction programs finished. They are planning an increased program for 1953, and have set a goal of 5,000 farmers. This is the maximum economical number of farmers that we can expect to connect in one year. It is not so difficult now to get pole line material as it has been in past years, but the supply of labor is scarce and expensive. The companies are also faced with the difficulty of training, for the construction of rural lines, a number of men who leave them in a short time and obtain work in the oil fields.

The following table shows the number of farms connected as at December 31st, 1952, and those under construction. It also shows the number of non-farm customers served off rural lines.





TABLE NO. 11

ALBERTA POWER COMMISSION

Combined Figures for Alberta Farm Electrification  
as at December 31st. 1952.

	<u>No. Farms Connected</u>	<u>Non-Farms</u>	<u>Hamlet Customers</u>	<u>Total non-Farm Customers</u>	<u>Total Served off Farm Lines</u>
Experimental Areas	2,729	334	361	695	3,424
Completed R.E.A.s	13,046	649	1,527	2,176	15,222
Individual Rurals	1,990				1,990
Farms supplied by Cities	290				290
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Actually Served	18,055	983	1,888	2,871	20,926

UNDER CONSTRUCTION \*

	<u>No. Farms Under Construction</u>	<u>Non-Farms</u>	<u>Hamlet Customers</u>	<u>Total Non-Farm Customers</u>	<u>Total Served off Farm Lines</u>
New Areas	1,527	25	83	108	1,635
Additions to old areas	523				523
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	2,050	25	83	108	2,158

Number of Farmers in Associations organized or quite  
definitely requesting service but not yet under  
construction -

<u>New Areas</u>	<u>Additions to Old Areas</u>	<u>Total</u>
3,029	853	3,882

Other Groups or Individuals that are in sight  
with reasonable certainty for Farm Electrification  
within 18 months -

<u>New Areas</u>	<u>Additions to Old Areas</u>	<u>Total</u>
2,800	1,100	3,900

\* 'Under Construction' includes any farms at any stage of construction from staking to energizing.



This table brings out one other point that is often overlooked; that is, the number of non-farmers, such as filling stations, machine shops and country stores, and the number of customers in hamlets who are getting service off these farm lines, and are able to get service only in virtue of the fact that these farm lines are built. It should be remembered that service to these customers was only possible due to the spread of farm electrification. It should also be borne in mind that, in many cases, the fact that these hamlets were within the area covered by an R.E.A. made the overall cost of joint service low enough to induce the farmers to build their lines. The farmers and the hamlet customers are mutually dependent.

While there are 18,055 bona fide farmers connected, farm electrification also serves 2,871 non-farm customers, who would not otherwise get service. The total number benefiting by the construction of these farm electrification lines is, therefore, 20,926.

The figures in the following table show the progress of farm electrification in another way.

Present State of Farm Electrification

Includes farmers within approximately  
12 miles of existing transmission lines.

Three Companies Only

	<u>Calgary Power Ltd.</u>	<u>Canadian Utilities Limited</u>	<u>Northland Utilities Limited</u>	<u>Total</u>
(A) Total Farms in Province				84,315
(B) Total Farms within economical distance of lines 1960 (Est.)	45,000	23,000	3,200	72,000
(C) Probable number that will take service (80%)	36,400	18,500	2,500	57,400
(D) Farms served by the three companies	14,017	3,398	339	17,754
(E) Farms served as a percentage of (C) in each company's area	38.5%	18.4%	13.5%	30.9%



A study of these figures shows that farm electrification has not made very rapid progress in the northern part of the Province. Of the 84,315 farmers in Alberta, 33,000 live north of a line drawn east and west through Edmonton. Of these, approximately 2,100, or 6%, have been connected to Central Station service. South of this line, there are 51,000 farmers, and service has been extended to approximately 15,900 of these, or 31%.

We feel certain that the proposed new revolving loan fund will be of great assistance to all farmers not yet connected. It will be of especial benefit to those in this area north of Edmonton. It is in this area, too, that we may expect the farmers to do much of the work of building their own lines. In some cases, particularly in the areas served by Northland Utilities Limited, the farmers have dug the holes, cut their own poles, and set them. This had the effect of reducing the out-of-pocket cost of farm lines. We should do everything that can be done to encourage the farmers to do this part of building their lines themselves.

At the end of December a total of 232 Rural Electrification Associations have been organized. Over the years these have borrowed \$5,246,976.78. At December 31st, 1952, over \$2,250,000 of this have been paid back. The investment in all rural lines in the Province is approximately \$16,000,000.

At the end of December, 1952, there were 13,721 miles of farm lines. During that year 4,108 miles were constructed.

As the number of Rural Electrification Associations increase more problems will arise, particularly those of defining the boundaries of Rural Electrification Associations. The Alberta Power Commission proposes to make surveys so as to obtain the location of every inhabited farm in the Province. This information is necessary if we are to work out a logical system of laying out farm lines.

The question of the adequacy, or otherwise, of the charges made at present to the farmers for operating and deposit reserve accounts, is one which





should be studied. The whole system of farm electrification in the Province has not been in operation long enough yet to come to very definite conclusions on these matters, but the question is one to be kept in mind, and possibly it should be investigated one or two years from now.

The Rural Electrification Short Courses, which have been put on under the supervision of the Department of Agriculture, appear to be working out very well. During the winter of 1952-53 several of these courses have been held, or are scheduled to be held. The points where these courses are being put on are Grande Prairie, Brooks, High River, Drumheller, Camrose, Lacombe and St. Paul. These courses do a great deal to give the farmers a better understanding of the practical application of electricity to their farming problems. It is hoped that a similar number can be held next year at other points in the Province.

The annual use of electricity per farmer in the Province in 1952 has been approximately 2,550 K.W.H. It is somewhat difficult to arrive at this figure. It cannot be done by taking the total K.W.H. sold to farmers and dividing it by the number of farms connected at the end of the year. Farmers' meters are read every three months. Those farmers connected after September 30th, will not have their meters read until after December 30th, so that in trying to estimate annual K.W.H. per farmer, the farmers who are connected after September 30th cannot be counted.

The K.W.H. used per farmer per month is low when the farmer is first connected, but increases rapidly during the first year or so. Since 4,576 farmers were connected in 1952, the consumption of these farmers will be low. This will have the effect of making an average figure for K.W.H. per farm per year seem lower than it would actually be if all farmers had been connected for a period of, say, three years. When, therefore, we use this figure of 2,550 K.W.H. per farmer per year, we should realize that the average farm that has been connected for three years, will use a great deal more than this.



Nevertheless, when we consider this figure of 2,550 K.W.H. per farmer per year, it is obvious that electricity has become a necessity in farming operations. It becomes all the more obvious that everything possible should be done to see that electricity is provided to at least 80% or 85% of our farmers as soon as possible. Fortunately, it appears that, for many years to come, we are going to be able to hook up farmers at the rate of 5,000 per year.

During 1952 electricity sold to farmers accounted for 3.4% of the total electricity sold in the Province. Even when we get all the farms electrified, the percentage of the Province's electrical output used by farmers will never be large. By 1960 it may be 6% of the total output.









Long

2